

REMARKS

Claims 1-9 are pending in this application with claims 1-5 being amended and claims 6-9 being added by this response.

Objection to the Abstract

Abstract is objected to for improper language and format. The Abstract has been amended in accordance with the comments of the Examiner to conform with proper language and format. In view of the amendments to the Abstract, it is respectfully submitted that this objection is satisfied and should be withdrawn.

Objection to Claims 2-5

Claims 2-5 are objected to for certain informalities. Claims 2-5 have been appropriately amended in accordance with the comments of the Examiner. In view of the Amendments to claims 2-5, it is respectfully submitted that this objection is satisfied and should be withdrawn.

New claims 6-9 correspond to the embodiment of Figure 6. Support for the new claims can be found on page 4 line 24 through page 5, line 18. Claims 6-9 include similar limitations to claims 1-5 and, thus it is respectfully submitted that the arguments presented hereinbelow regarding claim 1 are also applicable for new claims 6-9.

Rejection of Claims 1 and 2 under 35 USC § 102(b)

Claims 1 and 2 are rejected under 35 USC § 102(b), as being anticipated by Kundu et al. (Japanese Patent No. JP 2001-203513 A).

Kundu et al. (JP 2001-203513 A) discloses a high frequency quarter wavelength dielectric resonator resonated in a TEM mode and provided with a rectangular dielectric block having an upper face, lower face, 4 side faces. A first metallic layer is

applied on the upper face, a second to the lower face and a third metallic layer applied to one of the 4 side faces. The third metallic layer applied to one of the 4 side faces corresponds to an excitation electrode. Additionally the resonator includes two silver layers, the interior of which is filled with dielectric material.

The present claimed invention teaches a dielectric resonator antenna including a block of dielectric material having a first face intended to be mounted on earth plane and covered with a metallic layer and at least one second face perpendicular to and contacting the first face, covered with a metallic layer over a width less than the width of the second face and over a height less than or equal to the height of the second face.

The Examiner contends that Kundu et al. disclose a dielectric resonator antenna comprising a block of dielectric material having a first face intended to be mounted on an earth plane and covered with a metallic layer, wherein at least one second face perpendicular to the first face covered with a metallic layer over a width less than the width of the second face and over a height less than or equal to the height of the second face. The Examiner further states that Kundu et al. disclose the metallic layer covering the second face is centered with respect to the width of the second face. Contrary to the assertions of the Examiner, Kundu et al. disclose a dielectric resonator. The dielectric resonator is a bandpass filter using a TEM mode dielectric resonator. Kundu et al. do not even remotely suggest a dielectric resonating antenna as in the present claimed invention.

Additionally, Kundu et al. neither disclose nor suggest “at least one second face perpendicular to the first face is covered with a metallic layer contacting said metallic layer covering said first face, said metallic layer covering said second face extending over a width less than the width of the second face and over a height less than or equal to the height of the second face” as claimed in claim 1 of the present invention. Figure 4a and 4b of Kundu et al. show two faces of the dielectric box perpendicular to the first face. Figure 4a shows one perpendicular face covered with a metallic layer, however it does not contact the metallic layer covering the first face. Figure 4b shows another perpendicular face of the dielectric box perpendicular to the

first face with a metallic layer contacting the metallic layer of the first face, however, the metallic layer covering the second face extends over the width of the second face. Thus, it is respectfully submitted that, in view of the above remarks, claim 1 of the invention is not anticipated by Kundu et al. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

As claims 2 is dependent on claim 1 it is respectfully submitted that claim 2 is not anticipated for the same reasons as claim 1. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1, 3 and 4 under 35 USC § 102(b)

Claims 1, 3 and 4 are rejected under 35 USC § 102(b) as being anticipated by Herve et al. (U.S. Patent No. 6,304,220 B1).

Herve et al. describe a microstrip antenna structure. The antenna has a stacked resonant structure including a guide line for guiding electromagnetic waves formed in a conductive layer lying in a plane and two resonant structures having different resonant frequencies. The two structures formed on respective opposite sides of the plane are coupled directly to the line and substantially decoupled from one another by the conductive layer. The guide line is preferably of the coplanar type and the two resonant structures are preferably of the quarter-wave type. As can be clearly seen from Figure 1, elements EL and EH are coupling strips and layer C is a resonating plane. Herve et al. is particularly concerned with dual-band mobile telephones.

Herve et al. describes that “two resonant structure facing each other on respective opposite sides of a plane occupied by a conductive layer constituting a couple layer” as disclosed in column 3, lines 26-28. Herve et al. additionally teach “an internal coupling system including at least one slot formed in the coupling layer to enable coupling of the two resonant structures to a processor unit external to the antenna” as disclosed in column 3 lines 31-34. Herve et al., however, neither disclose nor suggest a “dielectric resonator antenna comprising a block of dielectric material”

as claimed in claim 1 of the present invention. Herve et al. utilizes two stacked resonant structures divided by a conductive layer, unlike the present claimed invention which includes a single block of dielectric material. Thus, it is respectfully submitted that, in view of the above remarks, claim 1 of the invention is not anticipated by Herve et al. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

As claims 3 and 4 are dependent on claim 1 it is respectfully submitted these claims are not anticipated for the same reasons as claim 1. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claim 1 under 35 USC § 102(a)

Claim 1 is rejected under 35 USC § 102(a) as being anticipated by Kundu et al. (Japanese Patent No. JP 2001-247503).

Kundu et al. (JP 2001-247503) teach dielectric resonators including dielectric blocks respectively having upper planes, a lower planes and four side faces and a waveguide combining part of an evanescent E mode. Each of the resonators have metallic layers coated respectively to the upper plane and the lower plane and metallic layers coated to one of the four side faces. The side surface coated with the layers are made to be short-circuited surfaces and the other three side surfaces are made to be open surfaces so as to operate as a quarter wavelength dielectric resonator and to maintain the TEM mode.

The Examiner contends that Kundu et al. disclose a dielectric resonator antenna comprising a block of dielectric material having a first face intended to be mounted on an earth plane and covered with a metallic layer, wherein at least on second face perpendicular to the first face covered with a metallic layer over a width less than the width of the second face and over a height less than or equal to the height of the second face. The applicant respectfully disagrees. Kundu et al. neither disclose nor suggest "at least one second face perpendicular to the first face is covered with a

metallic layer contacting said metallic layer covering said first face, said metallic layer covering said second face extending over a width less than the width of the second face and over a height less than or equal to the height of the second face” as claimed in claim 1 of the present invention. Figure 4a and 4b of Kundu et al. show two faces of the dielectric box perpendicular to the first face. Figure 4a shows one perpendicular face covered with a metallic layer, however it does not contact the metallic layer covering the first face. Figure 4b shows another perpendicular face of the dielectric box perpendicular to the first face with a metallic layer contacting the metallic layer of the first face, however, the metallic layer covering the second face extends over the width of the second face.

Additionally, Kundu et al. neither disclose nor suggest a “dielectric resonator antenna comprising a block of dielectric material” as claimed in claim 1 of the present invention. Kundu et al. disclose dielectric blocks separated by a waveguide combining part as opposed to a single block of dielectric material as claimed in the present invention. Thus, it is respectfully submitted that, in view of the above remarks, claim 1 of the invention is not anticipated by Kundu et al. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1, 3 and 5 under 35 USC § 102(e)

Claims 1, 3 and 5 are rejected under 35 USC § 102(e) as being anticipated by Kundu et al. (US Patent No. 6,621,381).

Kundu et al. (US 6,621,381) teach a high frequency quarter wavelength dielectric resonator resonated in a TEM mode and provided with a rectangular dielectric block having an upper face, lower face, 4 side faces. A first metallic layer is applied on the upper face, a second to the lower face and a third metallic layer applied to one of the 4 side faces. The third metallic layer applied to one of the 4 side faces corresponds to an excitation electrode. Additionally the resonator includes two silver layers, the interior of which is filled with dielectric material.

The Examiner contends that Kundu et al. disclose a dielectric resonator antenna comprising a block of dielectric material having a first face intended to be mounted on an earth plane and covered with a metallic layer, wherein at least on second face perpendicular to the first face covered with a metallic layer over a width less than the width of the second face and over a height less than or equal to the height of the second face. The Examiner further states that Kundu et al. disclose the metallic layer covering the second face is centered with respect to the width of the second face. The Examiner additionally states that Kundu discloses the metallic layer covering the second face being extend via a metallic layer covering a third face parallel to the first face, and the width of the metallic layer covering the third layer being different from the width of the metallic layer covering the second layer. The applicant respectfully disagrees. Kundu et al. neither disclose nor suggest “at least one second face perpendicular to the first face is covered with a metallic layer contacting said metallic layer covering said first face, said metallic layer covering said second face extending over a width less than the width of the second face and over a height less than or equal to the height of the second face” as claimed in claim 1 of the present invention. Figure 4a and 4b of Kundu et al. show two faces of the dielectric box perpendicular to the first face. Figure 4a shows one perpendicular face covered with a metallic layer, however it does not contact the metallic layer covering the first face. Figure 4b shows another perpendicular face of the dielectric box perpendicular to the first face with a metallic layer contacting the metallic layer of the first face, however, the metallic layer covering the second face extends over the width of the second face.

As claims 3 and 5 are dependent on claim 1 it is respectfully submitted these claims are not anticipated for the same reasons as claim 1. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1 and 2 under 35 USC § 102(e)

Claims 1 and 2 are rejected under 35 USC § 102(e) as being anticipated by Heinrichs et al. (US Patent No. 6,323,824 B1).

Heinrich et al. disclose a dielectric resonator antenna with a dielectric layer and a conducting layer formed on a main surface of the dielectric layer. An electrical contact is formed on the main surface for connecting the dielectric layer to a transmission line for transferring a signal between the dielectric layer and the transmission line. The electrical contact is insulated from the conducting layer. And the conducting strip is connected to the electrical contact.

Figure 3 of Heinrichs et al. show a dielectric resonator antenna having a metallic layer in a plane of symmetry. It further shows a second metallic layer on one head-end, perpendicular to the first metallic layer. The second metallic, however, "has a solder point that is located in the plane of symmetry, electrically insulated from the metallic layer" as described in column 3, lines 28-30. Thus, Heinrichs et al. neither disclose nor suggest "said block having a first face intended to be mounted on earth plane and covered with a metallic layer, wherein at least one second face perpendicular to the first face is covered with a metallic layer contacting said metallic layer covering said first face, said metallic layer covering said second face extending over a width less than the width of the second face and over a height less than or equal to the height of the second face" as claimed in claim 1 of the present invention. Thus, it is respectfully submitted that, in view of the above remarks, claim 1 of the invention is not anticipated by Heinrichs et al. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

As claims 2 is dependent on claim 1 it is respectfully submitted that claim 2 is not anticipated for the same reasons as claim 1. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Having fully addressed the Examiner's rejections, it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

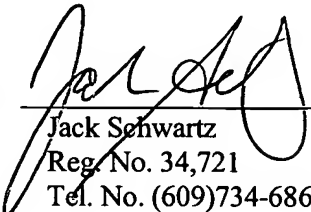
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No fee is believed due. However, if a fee is due, please charge the fee to
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Respectfully submitted,
Francoise Le Bolzer et al.

By:



Jack Schwartz
Reg. No. 34,721
Tel. No. (609)734-6866

Thomson Licensing Inc.
Patent Operations
PO Box 5312
Princeton, NJ 08543-5312
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